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A SYNOPSIS OF THE DIPTEROUS GROUPS AGROMYZINÆ, MILICHIINÆ, OCHTHIPHILINÆ AND GEOMYZINÆ.

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(Continued from p. 273.)

SUBFAMILY GEOMYZINÆ.

TABLE OF THE GENERA.

Middle of face with a pronounced tubercle; anterior fronto-orbital proclinate; calypter entirely devoid of cilia; only the root of the auxiliary vein present, the costal break immediately before the end of the first vein; cheeks comprised largely of the lateral prolongations of the center of the face; mesopleuræ entirely bare. (North America.)

Sinophthalmus Coquillett.

Face not tuberculate; anterior fronto-orbital reclinate; calypteres fringed with cilia; auxiliary vein weak, but usually meeting the costa some distance before the end of the first vein, at which place normally is located the costal break; lateral prolongations of the center of the face narrow; mesopleuræ often setulose or bristly.....2.

2. Cheeks narrow, less than one fourth the eye-height, the center of the face broader than the cheeks at the vibrissæ; arista plumose to loosely pubescent, more than one and one half times the length of the antenna, its basal segment long, the third antennal joint with fine but perceptible pubescence, especially along the front edge; upper occiput

- usually concave; anal angle of wing usually reduced and without large alula; marginal cell typically long. (OPOMYZINA.).....3.
- Cheeks broad, usually more than one fourth the eye-height, at the vibrissal angle usually broader than the diameter of the central part of the face; arista shorter and sub-bare, the microscopic hairs close together, its basal segment usually short, the third antennal joint without perceptible hairs arising from the spongy pubescence; occiput flattened or convex; anal angle evident and with alula; marginal cell typically not long and narrow. (CHIROMYZINA.).....20.
3. Dorsocentrals extending in front of the suture; wings pictured.....4.
Presutural dorsocentrals absent or scarcely differentiated.....6.
4. Anal angle of wing evident; wings largely clouded with black but with numerous hyaline spots; oral vibrissæ present; two fronto-orbitals; occiput flat; postverticals large; pleuræ bare; tibiæ with preapical bristle. (North America.).....*Spilochroa* Williston.
Anal angle reduced; wings hyaline, with some dark spots; no oral vibrissæ; one fronto-orbital; occiput concave above; no postverticals; pleuræ hairy, one sternopleural, one mesopleural bristle; no preapical bristle on tibiæ5.
5. Middle of cheeks with two stout vibrissæ; no anal angle to wing. (Europe, North America.).....*Geomyza* Fallen.
Cheeks with short fine hairs only; anal angle small but evident. (Europe, Australia?, North America?).....*Opomyza* Fallen.
6. At least the front tibiæ with preapical bristle on the outer side; four scutellar bristles; mesopleuræ hairy.....7.
Tibiæ without preapical bristle (in *Amphoroneura* the hind tibiæ with a weak preapical bristle); usually the basal scutellar bristles reduced or wanting; mesopleuræ bare; second vein usually extending close to the costa; postverticals usually minute or wanting; costa not spined. 12.
7. Vibrissæ present; wings usually pictured.....8.
No oral vibrissæ; wings hyaline; one fronto-orbital; front and hind tibiæ with preapical bristle; arista short-plumose; abdomen slender, the second and third segments with marginal bristles; costa not spinose; anterior cross-vein before the end of the first vein; ultimate section of the fourth vein two thirds the length of the penultimate section; discal cell confluent with the second basal cell. 5 mm. (Java.)
Apsinota Wulp.
8. Base of fifth vein greatly thickened; one fronto-orbital; front tibiæ only with preapical bristle. (North America.)....*Tauromyia* Giglio-Tos.
Veins not thickened; three fronto-orbitals; postverticals present; all the tibiæ with preapical bristle.....9.
9. The three fronto-orbitals in a single row; two acrostichals, the mesonotum densely hairy but the hairs not arranged in rows; discal and second basal cells confluent. (North America.)....*Pseudiasata* Coquillett.
Middle fronto-orbital proclinate and nearer the eye than the others are, but two of the fronto-orbitals of large size; discal cell complete; acrostichals numerous; costa spinulose.....10.

10. Antennæ more or less projecting, not reaching the oral margin; base of anal vein present, but rudimentary.....11.
 Antennæ decumbent, the third joint twice as long as broad, reaching the oral margin; anal vein wanting; foremost fronto-orbital reduced in size; face narrow, its sides parallel; arista pubescent; the second antennal joint tipped with a short projecting bristle. (Europe, North America.).....*Trypochæta* Rondani.
11. Arista plumose, the hairs longer above, third antennal joint one and one half times as long as broad; the second joint tipped with a strong projecting bristle; hindmost fronto-orbital reduced in size; face as broad as either eye, widest at level of the vibrissæ. (Europe, North America.).....*Diastata* Meigen.
 Arista pubescent; the third antennal joint short, oval; the second joint without projecting bristle; fronto-orbitals of male as in *Diastata*, of female as in *Trypochæta*. (Europe.).....*Euthychæta* Loew.
12. Oral vibrissæ not differentiated; eyes reniform, approaching below so as to narrow the face; arista long and loosely plumose; wings more or less pictured; four scutellars.....13.
 Oral vibrissæ present; eyes rounded, face not shield-shaped; arista short-plumose or pubescent; third antennal joint rounded; usually but two strong scutellar bristles.....15.
13. Wings fasciate, only the base of the auxiliary vein present, second basal and anal cells relatively large; second antennal joint rather broad, the third joint somewhat pointed.....14.
 Wings nearly hyaline, the broad marginal cell more or less brownish; second basal and anal cells wanting; third and fourth veins converging; second and third sections of the costa equal; third antennal joint broadly oval. (South Asia.) (Tijds. ent., LIV, 1911.)
Amphoroneura deMeijere.
14. Face hollowed out in the middle and elevated into a low ridge on each side and around the lower end; one pair of fronto-orbitals; two vertical, one ocellar and one postvertical. (North America.)
Scutops Coquillett.
 Center of face longitudinally convex and slightly raised above the facial orbits; two pairs of fronto-orbitals, forming a transverse row, one vertical, no ocellar, no postverticals. (North America.)
Cyamops new genus.
15. Wings six times as long as broad, the hind margin broadly and strongly excised, leaving the discal cell unusually narrow; occiput convex. (North America.).....*Mutiloptera* Coquillett.
 Wings not unusually narrow, the hind margin not excised; occiput concave; front femora usually with a thorn beneath.....16.
16. Wings pictured, the second vein arching forward close to the costa, the anal angle wanting; two fronto-orbitals; cheeks one tenth the eye-height; ocellar triangle large and shining. (North America.)
Ischnomyia Loew.

- Wings hyaline, the second vein parallel with the costa, the anal angle more or less evident.....17.
17. Two strong fronto-orbitals, in front of which is a smaller bristle, the hinder fronto-orbital behind the middle of the front; postverticals present; mesonotum more or less pollinose and with acrostichal setulæ; face and cheeks relatively broad. (Europe, North America.)
Anthomyza Fallen.
- One strong fronto-orbital at the middle of the front, with a smaller bristle before; postverticals minute or wanting; disc of mesonotum polished18.
18. Front opaque, the ocellar triangle not enlarged.....19.
Ocellar triangle enlarged, reaching nearly to the antennæ, it and the frontal orbits descending to include the orbital bristle highly polished, thus forming an M-shaped design on the front; arista short-plumose; two strong dorsocentrals; postverticals minute; eyes large, the lower facets enlarged, thus reducing the size of the face and cheeks. (North America.).....*Mumetopia* new genus.
19. One dorsocentral; face shining black; postverticals minute; arista plumose; wings long and narrow. (Europe.).....*Anagnota* Becker.
- Two dorsocentrals; face pruinose; no postverticals; a rounder head, more elevated thorax, shorter and broader wings with the tip less rounded, and shorter claws. (Europe.).....*Paranthomyza* Czerny.
20. Pubescent, without macrochætæ, scutellum margined with fine bristles, cheeks broad and hairy; front hairy, produced over the antennæ as a subconical process. (Europe.).....*Selachops* Wahlberg.
- Macrochætæ developed; front not produced.....21.
21. But two postsutural dorsocentrals present; no vibrissæ; the polished front with a broad transverse impression below the middle, and with two fronto-orbitals; no preapical tibial bristles; costa not broken and not spinose. (North America.).....*Pseudodinia* Coquillett.
- Dorsocentrals usually extending in front of suture; front neither transversely grooved nor polished; fracture of costa before the end of the first vein usually distinct.....22.
22. Tibiæ with preapical bristle; costa bristly with short spines; two fronto-orbitals; two presutural dorsocentrals; two or three sternopleurals..23.
Tibiæ without preapical bristle; costa not spinose; vibrissa small or wanting; one sternopleural; one presutural dorsocentral.....24.
23. Black species; vibrissæ large; face vertical, below the epistome with an oral margin; cheeks narrower than the eye-height; antennæ normal; front pollinose. (Europe, Asia, North America.)*Trixoscelis* Rondani.
- Yellow species, with yellow bristles; vibrissæ rather small; face receding below, without oral margin; cheeks nearly as broad as the eye-height; antennæ very small. (North America.).....*Zagonia* Coquillett.
24. Ovipositor lengthened, two times as long as another segment, but above deeply compressed, so that the lateral margins form narrow ridges; anal and second basal cells lacking; two fronto-orbitals; one row only of acrostichals. 1.8 mm. (Europe.).....*Pseudopomyza* Strobl.

- Ovipositor not of remarkable structure; anal cell at least present.25.
25. Acrostichal setulæ and hairs of front absent or greatly reduced; bristles and hairs black; discal cell usually fused with the second basal; cross-veins rather close together; usually no oral vibrissa; one to three fronto-orbitals; upper occiput rather concave. (Europe, Asia, North America.)*Tethina* Haliday.
- Acrostichal and frontal hairs present; hairs and bristles often yellow or white; discal cell separated from the second basal; oral vibrissa more or less differentiated.26.
26. Cheeks with a marginal row of hairs; face nearly vertical or projecting; cinereous species; ultimate section of fifth vein usually shorter than the penultimate section of the fourth; three or four fronto-orbitals, outwardly bent. (Europe, North America.)*Rhinoessa* Loew.
- Cheeks hairy; face receding; ground-color yellow; ultimate section of fifth vein equal to or longer than the penultimate section of the fourth vein27.
27. Two or three reclinate fronto-orbitals; center of face small and deeply sunken; upper occiput flattened. (Europe, Africa, North America.)
Aphaniosoma Becker.
- Three fronto-orbitals, the front pair convergent; center of face not deeply impressed; occiput rather convex. (Europe, Asia, North America.)
Chironomyia Desvoidy.

SINOPHTHALMUS Coquillett.

This genus is aberrant in the Geomyzinæ. It differs from all the other genera of this group before me in having the calypteres entirely without cilia; the auxiliary vein very short, entirely vanishing half-way to the costa, the costal break immediately before the end of the first vein; the costa showing a weak spot beyond the humeral cross-vein corresponding to the first costal break of other subfamilies; the basal cross-vein of the discal cell is interrupted; the lateral prolongations of the center of the face occupy a large part of the cheeks; the mesopleuræ entirely bare; and the face with central protuberance.

The genus is certainly quite similar to *Drosophila replcta* Wollaston, differing indeed only in the family characteristics, such as the separate basal cell and pubescent arista. The two are such replicas of each other, so similar in size, color, vestiture, chaetotaxy, and proportions of parts, that it is hard to believe that their similarity is the result of convergence and that they should be assigned to separate subfamilies.

But a single described species.

Stout, mottled with black and yellowish; head yellow, the cheeks, sides of occiput and center of front marked with black; mesonotum centrally cinereous black, with setigerous brown spots; the pleural sutures and base and apex of the scutellum testaceous; abdomen black, except at base and on incisures; femora black except at end, tibiæ with three brown rings; wings hyaline, the cross-veins and a spot on the fourth vein brown. 3.5 mm. Cal.* (Proc. Ent. Soc. Wash., VI, 191, 1904.)
pictus Coquillett.

SPILOCHROA Williston.

Gray pollinose, head, thorax, antennæ and legs testaceous; abdomen brownish black, irregularly mottled with white pubescence and with sparse black hairs; wings largely infumated, the base and numerous rounded or quadrate spots hyaline (see fig. 3, page 297, Williston's Manual, 3 ed.); ocellar bristles large, distant one third the width of the front; costa with short spines. 2.5 mm. (Fla., W. Ind.*) (*Peratochetus* (*Heterochroa*) *ornatus*).....*ornata* Johnson.

GEOMYZA Fallen.

- Wings with apical spot and both cross-veins brown; mesonotum shining red; legs yellow2.
Wings with at least the anterior cross-vein not bordered with brown.....3.
2. Legs entirely yellow; metanotum red; female abdomen reddish, with brown bands, male abdomen sometimes reddish at base. 3-4 mm. (Eur.)* U. S., in Hough Coll.).....*combinata* Linnæus.
Hind femora with more or less evident preapical brown ring; metanotum blackish; abdomen black, of the female reddish at tip. 3 mm. (Alaska, Wash.,* Id.,* Wyom., Cal.)* (*Balioptera*)...*lurida* Loew.
3. Legs entirely yellow; mesonotum shining red; posterior cross-vein clouded with brown; abdomen of female shining black. 4 mm. (Eur.; Cal.)
venusta Meigen.
Hind legs largely brown; mesonotum blackish; both cross-veins unclouded; apex of abdomen of female reddish. 3 mm. (Cal.,* Wash.)*
monostigma new species.

Geomyza monostigma new species.

Female.—Length 3 mm. Largely blackish, shining. Back of head blackish, the anterior half of the front, the face, cheeks, antennæ and mouth testaceous; arista plumose above, pubescent below. Mesonotum blackish, except the humeri and sides; scutellum reddish; metanotum black; pleuræ dark brown, the sutures broadly reddish. Abdomen black, the apex reddish. Legs dull yellowish, the outer half of the hind femora, and a basal and apical broad ring of the hind tibiæ fuscous. Halteres white, the stem black. Wings clear hyaline, the humeral and costal cells blackish; at the tip of the marginal cell, extending across the end of the third vein, is an apical blackish spot; cross-veins not marked with a dark spot.

Two specimens. Stanford University, California, 24 April, 1910 (Wm. M. Mann); Seattle, Washington.

Structurally the species is the same as *combinata* and *lurida*.

OPOMYZA Fallen.

It is not at all certain that the following species described by Walker is a true *Opomyza*. His full description is quoted.

Testaceous, head whitish in front; thorax rather stout; abdomen with a spot on each side near the base, a dorsal spot and the apical half black; legs whitish; wings slightly grayish, with a blackish spot on the costa near the base, and another on the costa at two thirds of the length; discal transverse vein straight, parted by twice its length from the border, and by much more than twice its length from the prebrachial transverse, which is near the base. 3 mm. (U. S.) . . . *signicosta* Walker.

TAUROMYIA Giglio-Tos.

The genus *Tauromyia* has been doubtfully located among the Geomyzinæ. Williston believes it can not belong here. Its size, eight millimeters, is greater than that of any other member of the group, but otherwise there is nothing radical in the description to exclude this fly from this subfamily. The head is somewhat hemispherical, the face large and vertical, the cheeks narrow and bare but furnished with long bristles along the margin of the large mouth-opening. One recurved fronto-orbital bristle. Only posterior dorsocentrals present. Wings long, the anal angle wanting, the fifth vein thickened at base.

Testaceous; face with three small black spots; front with two black spots above antennæ and ocellar triangle black; mesonotum with four brown vittæ; abdomen blackish apically, all the segments margined with brown; wings lightly yellowish. 8 mm. (Mex.) . . . *pachyneura* Giglio-Tos.

PSEUDIASTATA Coquillett.

Yellow, the abdomen brown; wings hyaline, marked with six brown bands, of which five extend posteriorly from the costa and one covers the posterior cross-vein. 3 mm. (Md.) (Proc. Wash. Ent. Soc., IX, 148, 1907.) *nebulosa* Coquillett.

TRYPTOCHÆTA Rondani.

Cinereous brown, the front half of the wings lightly infumated; face, cheeks, anterior edge of the front, humeri, legs including coxæ and base and tip of abdomen yellow; mesonotum with four poorly defined darker vittæ alternating with more pollinose grayish stripes. 3 mm. (Wash.*) (Wien. entom. Ztg., XXX, 44, 1911.) *micans* Hendel.

DIASTATA Meigen.

- Hind cross-vein enclosed in a brown mark.....2.
 Wings hyaline, slightly infumated along the costal portion, the costal cell mostly black, the hind cross-vein slightly nearer the end of the fourth vein than the anterior cross-vein. 2.5 mm. (Wash.*) *modesta* n. sp.
2. Costa and posterior cross-vein infumated; arista two times as long as the third antennal joint.....3.
 Brown markings of wing including the anterior cross-vein, the costa paler than the markings; arista shorter.....4.
3. Posterior cross-vein considerably nearer the anterior cross-vein than the end of the fourth vein; thorax with four indistinct vittæ. 2.5 mm. (Martin's Falls, Canada.).....*tenuipes* Walker.
 Posterior cross-vein nearer the end of the fourth vein than to the anterior cross-vein; mesonotum not vittate; middle coxæ of male with very long hairs. 4 mm. (Eur.; Asia; N. H., Wash.*)...*vagans* Loew.
4. Wings brown, marked with three fasciæ, the first subbasal, the second between the cross-veins, starting at the second vein and interrupted or not by the discal cell, the third subapical and more or less interrupted at the fourth vein; base of abdomen with pollinose fasciæ. 3 mm. (N. J., Wisc.*).....*pulchra* Loew.
 Wings largely hyaline or subhyaline, marked with blackish spots about the costal cell, the anterior cross-vein, the posterior cross-vein extending to the third vein, and narrowly at the end of the second, third and fourth veins.....5.
5. Abdomen shining black; on each side of the middle black spot of the wings is a white spot, the basal of which extends from the third to the fifth veins, the outer from the third to the fourth veins. 2-3.5 mm. (Alaska, Wash.,* Id.,* Or.).....*eluta* Loew.
 Basal segments of abdomen fasciate with white pollen; outer white spot of wing not present. 3 mm. (Eur.; N. J., Ohio.)...*nebulosa* Fallen.

Diastata modesta new species.

Female.—Length 2.5 mm. Disc of mesonotum brownish pollinose, the notopleural suture and pleuræ cinereous; abdomen subshining, with uniform thin coating of brownish pollen. Front luteous, the orbits raised as far as the foremost bristle, merging at the minute hindmost frontal bristle with the brown-cinereous color of the occiput. Postvertical bristles large, twice as far apart as the ocellars. Antennæ yellow, the third joint one and one fourth times as long as broad, apically rounded, the black arista loosely plumose, and about two times as long as the joint. Face and cheeks white. Two dorso-centrals, eight rows of acrostichals, three supra-alars, two sternopleurals, mesopleuræ setulose with a row of six upward-directed bristles along the posterior margin. Legs including the coxæ yellow. Wings nearly hyaline, the costal cell black, the costal portion lightly infumated, no fasciæ or spottings; anterior cross-vein located under the end of the first vein, costal spines minute.

A single specimen, taken July 31, 1908, on Mount Constitution, Orcas Island, Washington.

SCUTOPS Coquillett.

Yellow, apices of palpi, two broad vittæ on mesonotum, metanotum except sides, abdomen and two interrupted bands on each tibia, black; polished, the face, orbits and notopleural suture pruinose; wings brownish outwardly, with a subapical fascia and the tip whitish. 3 mm. (Nicaragua.) (Proc. Ent. Soc. Wash., VI, 97, 1904.)

fascipennis Coquillett.

CYAMOPS new genus.

Near *Scutops* Coquillett. Head broader than the thorax, the upper occiput concave, the lower occiput convex, the head therefore longest below, but still much higher than long. Eyes reniform, vertical, the lower anterior facets enlarged so as to diminish the size of the face. Sides of front nearly parallel, that part of the front between the ocelli and the antennæ nearly twice as broad as long; two pairs of fronto-orbitals, on nearly a horizontal row, the inner pair reclinate, the outer pair proclinate; no ocellar or postvertical bristles; but one pair (the inner) of vertical bristles present. Face suddenly narrowed beneath the antennæ by the encroaching eyes, which nearly obliterate the facial orbits at the place where they pass into the genæ, the sides of the center of the face, however, vertically subparallel, this portion of the face slightly convex, expanding and rounding below without an oral margin into the large buccal cavity; clypeus (Chitinhufeisen) strongly developed, but retracted into the cavity. Cheeks about one tenth the eye-height, the genæ nearly parallel with the margin of the eye, the buccæ differentiated only as the line bearing the weak oral hairs, the lateral prolongations of the center of the face forming a triangular anterior part of the cheeks, passing into, but separated by a distinct oblique suture, from the unusually developed shining posterior oral margin; vibrissæ no larger than the oral hairs, but correct.

Chaetotaxy of the thorax as follows: one dorsocentral, two rows of fine acrostichals approximate before but diverging behind, two notopleurals, two supra-alars, four scutellars; one sternopleural centrally located, pleuræ otherwise glabrous. Abdomen very sparsely hairy, comprising six flattened segments, broad up to the last segment, which is very short and abruptly and strongly constricted for the attachment of the small genitalia. The hypopygium consisting of two vertically moving valves, from the upper of which arise two short converging

processes. Legs without bristles and with ordinary hairs; the middle tibiae tipped with a long spur. Calypteres rudimentary, fringed with but four hairs. Wings about two and one half times as long as wide; costa stopping at the fourth vein, weakened but not actually broken some distance before the end of the first vein, the second section of the costa two times as long as the third, which is twice the length of the fourth section; auxiliary vein straight, vanishing halfway between the humeral cross-vein and the end of the first vein; the first vein extending two fifths the length of the wing; third and fourth veins slightly converging, the anterior cross-vein before the middle of the long discal cell, the sections of the fourth vein proportioned about three to four, those of the fifth vein about six to one, the posterior cross-vein longer than the ultimate section of the fifth and one half the length of the penultimate section of the fourth vein; basal cells completely formed and elongate, anal vein extending one half the way to the margin of the wing.

Type species: *Cyamops nebulosa*, new species, following.

Cyamops nebulosa new species.

Male.—Length 2.5 mm. Shining, blackish, the lower part of the front opaque black, with white-pollinose orbits, the face and cheeks whitish-pollinose. Legs including the coxæ yellowish, the outer two thirds of the femora blackish, the tip of the tarsi brown. Halteres with large white knob; calypteres margined with brown. Center of wing with a large brownish cloud, the apex similarly clouded.

One specimen. Woods Hole, Massachusetts. July 7, 1902.

While this insect is markedly different from the other *Geomyzinæ*, yet it finds its best location here. The only other groups with which it could be confused are the *Psilinæ* and the *Drosophilinæ*.

MUTILOPTERA Coquillett.

Yellow, the abdomen black. Wings hyaline, the apex brown, which color extends half way to the posterior cross-vein; cross-veins of equal length, the posterior clouded with brown. 2 mm. (N. Dak.) (Proc. Ent. Soc. Wash., IX, 148, 1907.).....*apicalis* Coquillett.

ISCHNOMYIA Loew.

With darker spot at end of second vein, all the other veins bordered with brown; upper vibrissæ long; palpi brownish; pleuræ largely blackish; front femora with strong thorn beneath. 3 mm. (Mich.*) (Wien. ent. Ztg., XXX, 45, 1911; Williston, Manual, 3 ed., p. 80, fig. 14.)

spinosa Hendel

Third vein broadly brown, expanding anteriorly at tip of wing, the root of the wing black, the posterior veins obscurely bordered; both vibrissæ small; palpi whitish; pleuræ whitish, with black border above; front femora beneath with a row of uniform bristles; mesonotum often with two pale stripes. 2.5 mm. (Pa., N. J., Wisc.) *albicosta* Walker.

ANTHOMYZA Fallen.

Head, thorax, abdomen, halteres and legs, except the last tarsal joint, wholly yellow. 2.6 mm. (Eur.; Wash.*).....*pallida* Zetterstedt.

Partly or wholly blackish.....2.

2. Pleuræ yellow, largely or wholly; last tarsal joint black.....3.

Pleuræ wholly black, lightly cinereous; legs entirely yellow; occiput and thorax black, abdomen brownish; halteres yellow. 2.5 mm. (Eur.; Ont.,* Ill.,* N. Mex.,* Id.,* Wash.*).....*gracilis* Fallen.

3. Mesonotum and scutellum grayish; head, antennæ, humeri, pleuræ, venter, halteres and legs yellow. 2.5 mm. (Alaska, Wash.,* N. H.)

tenuis Loew.

Largely yellowish; occipital spot, mesonotum with four faint vittæ, pleuræ above and abdomen with fuscous fasciæ, darker. 2.3 mm. (D. C., N. J., Ga., Cal., Wash.*).....*variegata* Loew.

MUMETOPIA new genus.

Related to *Anthomyza* but differs in the narrower face and cheeks, the reduction of the fronto-orbital bristles, and the specialization of the interfrontalia.

Eyes large, subquadrate, the facets of the lower-front part enlarged so as to reduce the face and cheeks, the face thus at most scarcely more than one half the width of the front at its middle, and the cheeks about one tenth of the eye-height. The uppermost fronto-orbital not behind the middle of the front, at most one small fronto-orbital anterior to this. Ocellar triangle very large, glistening, reaching quite to the frontal suture; frontal orbits differentiated; upper occiput concave; postverticals minute or wanting. Two dorsocentrals; basal scutellars minute; acrostichals greatly reduced; two sternopleurals. Front femora with thorn beneath and with usual bristles; no preapicals; ungues small. Wings narrow, three times as long as wide, the anal angle not pronounced.

The pubescence of the arista is pronounced so as to be almost short-plumose. The body is polished, almost devoid of a pollinose coating.

Type: *Mumetopia occipitalis* new species.

KEY TO THE SPECIES OF MUMETOPIA.

- Front tibiæ and first three joints of front tarsi black; face less than one fourth as broad as the front at its middle. 1.2 mm. (Porto Rico.)
 (*Anthomyza*.) *nigrimana* Coquillett.
- Legs yellow, at most the last tarsal joint black; face about one half as broad as the front at its middle.....2.
2. Occiput with a white-pruinose spot above the neck; sides of mesonotum thinly white pruinose; pleuræ largely yellow; last tarsal joint not black; face white; mouth-parts yellow. 1.75 mm. (Ga.,* La.,* Tex.)*
occipitalis new species.
- Occiput, notum, pleuræ and abdomen entirely polished black; last tarsal joint black, contrasting with the remainder of the legs.....3.
3. Clypeus, palpi and base of proboscis black; center of face dusky; third antennal joint infuscated above. 2.5 mm. (Mass.)*. *nitens* new species.
- Mouth-parts entirely yellow; face white; third antennal joint white. 2 mm. (N. H.) (*Anthomyza*.)..... *terminalis* Loew.

Mumetopia occipitalis new species.

Length 1.75 mm. Front black, next to the antennæ yellowish, which becomes whitish pollinose and broader on the orbits; face and cheeks white; occiput black except along the oral margin, marked with a silvery white pruinose spot just above the neck. Antennæ yellow, the third joint mostly white and white-hairy, infuscated only at the insertion of the long-pubescent black arista. Mouth-parts, including the small clypeus, yellow. Width of face one half the width of the front at its middle. A single pronounced fronto-orbital located beyond the middle of the front, with sometimes a minute bristle immediately before it. Mesonotum and abdomen shining, though very little dusted, black, the sides of the mesonotum yellowish overlaid with white pruinosity; pleuræ yellow, but with a horizontal blackish line just below the notopleural suture; two dorsocentrals, acrostichals almost entirely wanting. Halteres and legs light yellow. Wings narrow, hyaline, the veins yellow.

Seven specimens: Austin, Texas (February to November), and Opelousas, Louisiana (March). Those from the latter place were received from Dr. Hough determined as *terminalis* Loew.

Mumetopia nitens new species.

Length 2.5 mm. Shining black, the front above the antennæ, facial orbits, labella, halteres, and the legs, except the last tarsal joint, light yellow. The narrow buccæ continuing as the facialia nearly to the antennæ black; the center of the face dusky; the large clypeus and the palpi black. Antennæ yellow, the third joint dusky above; the black arista with rather long pubescence. The width of the face at its middle somewhat more than one half the width of the middle of the front. Near the middle of the front is a stout fronto-orbital, and towards the level of the antennæ is another, about one half the length of the former. Two dorsocentrals and four rows of fine but distinct

acrostichals. Front femora with a pronounced thorn. Wings hyaline, veins yellow.

Three specimens, Woods Hole, Massachusetts, July 16, 1902.

This species differs from *occipitalis* in the shape of the face, position of the fronto-orbitals, structure of the mouth, as well as in color and size. It can hardly be Loew's *terminalis*.

PSEUDODINIA Coquillett.

Front below the ocelli broader than long; apices of third and fourth veins diverging; black, the proboscis, halteres, tarsi and apices of the tibiæ yellow, the thorax thinly gray pruinose. 1.5 mm. (N. Mex.)

varipes Coquillett.

Front below the ocelli square; third and fourth veins not diverging; black, the proboscis, halteres, tarsi and apices of the tibiæ yellow. 2.

2. Occiput, notum, first three segments of the abdomen, and the femora cinereous pruinose, the front femora with stout bristles. 2 mm. (Tex.)*

pruinosa new species.

Head, mesonotum, scutellum and abdomen polished black, only the notopleural suture pruinose; femora shining black, not bristly. 2 mm. (Id.)*. *nitida* new species.

Pseudodinia pruinosa new species.

Male.—Length 2 mm. Black, the proboscis, end of tibiæ and the tarsi yellow, the halteres white. Front polished black, with a broad, shallow, transverse depression above the antennæ, that part of the front between the antennæ and the ocelli square, bearing two small reclinate fronto-orbitals; ocellar bristles small and distant, postverticals small and decussate. Face, cheeks and occiput cinereous-black; no vibrissæ; cheeks one sixth the eye-height. Two dorsocentrals placed well back toward the scutellum, about eight irregular rows of minute acrostichals; entire thorax cinereous pruinose. First three segments of the abdomen lightly cinereous pruinose, the remaining segments polished black. Legs rather short and robust, the femora and base of tibiæ cinereous, front femora bristly, middle tibiæ with apical spur. Calypteres white, with rudimentary fringe. Wings hyaline, veins yellowish, the auxiliary vein distinctly separated from the first throughout its entire course though approaching it before the end, the first vein there bent so as to end near the middle of the wing; costa unbroken; third vein ending near the tip of the wing; the sections of the fourth vein proportioned one to two, of the fifth vein three to one.

One specimen, Austin, Texas, May 11, 1900.

Pseudodinia nitida new species.

Female.—Length 2 mm. Slender, shining black, the proboscis, end of the tibiæ, the tarsi and the very narrow pleural sutures testaceous; halteres and

calypteres white. Front shining, the transverse impression above the antennæ shallow and provided with scattered proclinate hairs, that part of the front before the ocelli nearly square; ocellar bristles small, postverticals cruciate, two reclinate fronto-orbital bristles, the anterior at the middle of the front; ocellar triangle and orbits polished, the M-shaped mark between somewhat sericeous; face short, greatly receding, carinate only between the antennæ, facial grooves broad and shallow, cheeks almost bare and about one seventh the eye-height. Mesonotum almost devoid of dust, highly polished, the humeri and the notopleural suture lightly gray-pruinose; two dorsocentrals, acrostichals rather sparse, fine and irregular; pleuræ very lightly pruinose, one mesopleural and two sternopleural bristles, no prothoracic, no setulæ. Abdomen highly polished, but the basal three segments show very sparse pollen, the last segment short and compressed. Legs short, the femora not robust, bristles of front femora fine, no tibial bristles, but the middle tibiæ with a small apical spur. Wings narrow, hyaline, whitish at base, veins becoming light brown apically; the auxiliary vein almost touching the first vein before its end, the first vein continuing straight and ending in the costa much before the middle of the wing, the costa, however, unbroken; third vein ending a little before the wing-tip; penultimate section of the fourth vein less than one half as long as the ultimate section; the sections of the fifth vein proportioned about three to one.

One specimen, Avon, Idaho, July 26, 1912.

TRIXOSCELIS Rondani.

- Mesonotum whitish gray, with two indistinct brown vittæ; costal margin of wing between the first and second veins brown; four dorsocentrals; legs yellow, the coxæ and front legs dark brown; antennæ brown. 1.5 mm. (Galapagos Isl., Ariz.) (*?canescens* Loew, Eur.) (*Parodinia: Rhicnoëssa.*)*costalis* Coquillett.
- Mesonotum cinereous; wings hyaline, the costa not bordered with brown; five dorsocentrals2.
2. Antennæ entirely yellow, the third joint at most infuscated.....3.
Third joint of antennæ black; legs yellow, the tarsi brownish. 2 mm. (Cal.) (*Parodinia.*).....*cinerea* Coquillett.
3. Front legs, except the white coxæ, black, the posterior legs yellow; pollen of upper edge of mesopleuræ slightly brownish. 2.5 mm. (Eur.; Id.,* Wash.,* Cal.,* B. C.*).....*frontalis* Fallen.
At least the tibiæ and tarsi yellowish, or the front legs not darker than the others; thorax uniformly cinereous pollinose.....4.
4. Legs entirely yellowish, including the coxæ; face yellowish. 2.5 mm. (Cal.,* Wash.*) (Wien, ent. Ztg., XXX, 43, 1911.).....*prima* Hendel.
Coxæ and femora blackish, the tibiæ a little infuscated; center of face dusky. 2 mm. (Cal.) (Trans. Am. Ent. Soc., XXXIV, 100, 1908, *Siligo.*)*litorea* Aldrich.

ZAGONIA Coquillett.

Entirely yellow, including the hairs and bristles, except that those of the costa, the spurs at the end of each tarsal joint, the claws and sometimes the palpi are black; female with the third joint of the antennæ black, male with the antennæ entirely yellow. 2.8 mm. (Cal., Or., Wash.*) (Invert. Pacif., 27, 1904. Syn.: *Siligo oregona* Aldrich, Trans. Am. Ent. Soc., XXXIV, 99, 1908.).....*flava* Coquillett.

TETHINA Haliday.

Vibrissal angle projecting; face one half as long as the front; three fronto-orbitals; gray-black, the front anteriorly and the face yellow. 3 mm. (Pender Island, B. C., not Idaho; Wash.) (Wien. ent. Ztg., XXX, 41, 1911.)*rostrata* Hendel.

Face vertical without projecting vibrissal angle; face more than one half as long as the front.....2.

2. Two small fronto-orbitals; the cheeks, face and anterior portion of the front whitish yellow, the light color of the front gradually merging with the brownish vertex.....3.

One large fronto-orbital; front coxæ pruinose and white, remainder of legs black; center of front orange, sharply delimited from the brown vertical triangle. 2.5 mm. (Ga., La.,* Cal.,* Wash.,* Alaska.) (*Pelomyia occidentalis* Williston.) (*Rhinoëssa*.).....*coronata* Loew.

3. Largely olivaceous black, including all the coxæ, femora and tibiæ; tarsi black apically; antennæ mostly black. 2 mm. (Mass., R. I., Cal., Wash.,* Id.,* Alaska.) (*Rhinoëssa*.).....*parvula* Loew.

Cinereous; legs yellow, only the femora in part cinereous and the last tarsal joint blackish; antennæ mostly yellow. 1.5 mm. (Tex.)*
maritima new species.

Tethina *maritima* new species.

Female.—Length 1.5 mm. Yellowish-cinereous, bristles black. Occiput and ocellar triangle yellow-cinereous, front yellow, face and cheeks white. Antennæ yellowish brown, a little darker above, the arista pale. Mouth-parts yellow, the small clypeus black. One or two pairs of minute fronto-orbitals; ocellar bristles widely distant from each other; no postverticals. Thorax and abdomen densely yellow-cinereous pollinose, the last abdominal segment yellowish; four dorsocentrals, one presutural, one sternopleural, one mesopleural bristle. Legs including the coxæ yellow, the femora broadly diffused with the body-color, the last tarsal joint brown. Halteres yellow. Wings faintly yellowish and faintly opalescent; the penultimate section of the fourth vein two thirds as long as the ultimate section of the fifth vein.

Three specimens, Galveston, Texas, taken during the early part of June, 1900.

RHICNOESSA Loew.

- Cheeks broad, fully two thirds as wide as the eye-height, the eyes relatively small and horizontally oval.....2.
- Cheeks narrow, much less than one half as wide as the eye-height, the eyes relatively larger; hairs and bristles black.....4.
2. Hairs and bristles of entire body and of the legs white; white-cinereous; the cheeks, face and front whitish in ground-color and not cinereous; the femora dusky and last tarsal joint black. 2.5 mm. (Mass., R. I., N. J.,* Tex.*).....*albula* Loew.
- Hairs and bristles of the thorax black; cinereous black species.....3.
3. Hairs of abdomen white; front relatively broad; mesonotal pollen somewhat yellowish; legs yellow, the last tarsal joint and the apex of the femora darkened; third section of the costa only a little longer than the fourth section; penultimate section of the fourth vein a little longer than the ultimate section of the fifth vein. 2.5 mm. (West Ind.) (*Anthomyza cinerea* Williston, 1896, nec *Rhichnoëssa cinerea* Loew, 1862, from Europe, Asia and Africa.).....*willistoni* new name.
- Hairs of abdomen black; front relatively narrow; thorax and abdomen cinereous; femora cinereous black, the tibiæ and last tarsal joint dark; third section of the costa much longer than the fourth; penultimate section of the fourth vein shorter than the ultimate section of the fifth. 1.75 mm. (Mass.*).....*whitmani* new species.
4. Front narrow, red, with brownish orbits becoming white next to the eyes; antennæ yellow; legs yellow, the last tarsal joint brown. 2-2.5 mm. (West Ind.) (*Anthomyza*).....*xanthopoda* Williston.
- Front broad, dull brownish; antennæ blackish; femora and tibiæ black; eyes vertically but obliquely oval. 2 mm. (Wash.*)
milichioides new species.

Rhichnoëssa whitmani new species.

Male.—Length 1.75 mm. Cinereous black, including the occiput, vertex, coxæ and femora. Front testaceous, the orbits whitish, the sides of the front slightly rounding to narrow the front below, the lowermost (fourth) fronto-orbital minute, four pairs of interfrontal bristles, postverticals convergent. Face and cheeks white, the latter two thirds as broad as the height of the horizontally oval eyes; the distance from the mouth to the root of the antennæ about one half the length of the front and vertex; oral margin with a single row of five black bristles, the foremost perfect but not otherwise differentiated as a vibrissa. Antennæ small, reddish, the outer joint a little dusky at its end, the short arista black. Proboscis dark at the base, the labella yellow; palpi yellow. Thoracic bristles rather strong, four dorsocentrals, acrostichals in four rows, lateral setulæ strong; one sternopleural, one superior mesopleural, a vertical row of four bristles along the posterior edge of the mesopleuræ. Abdomen cinereous, not at all reddish, the hind margin of the posterior segments narrowly whitish, its bristles black; hypopygium small, concolorous. Coxæ and femora cinereous black, the tibiæ blackish, the tarsi except the apical

joints yellow. Halteres and calypteres whitish. Wings slender, hyaline, the veins rather dark; fourth section of the costa two thirds as long as the third section; penultimate section of the fourth vein three fourths as long as the ultimate section of the fifth, and twice as long as the posterior cross-vein; basal cells distinct, anal vein represented only by a fold.

One specimen, Woods Hole, Massachusetts, July, 1902.

I name this species in memory of Professor Charles Otis Whitman, whose name will ever be associated with the locality where the type was found.

Rhinoëssa milichioides new species.

Male.—Length 2 mm. Black, densely covered with cinereous pollen; cheeks, face, except the epistome, and front testaceous. Antennæ piceous; the arista scarcely longer than the third joint. Proboscis long, slender, chitinized, geniculate, dark in color, the yellow slender labella as long as the middle section of the clypeus; palpi yellow, linear. Front as broad as either eye, its orbits rounding so that at the antennæ the eyes are one third closer together than they are at the level of the front ocellus; two rows of small frontal bristles, the inner row with six bristles, directed inward, the outer row with four reclinate bristles directed rather outward; the center of the front with four pairs of cruciate bristles between which there is a shallow depression; ocellar bristles proclinate, diverging and midway between the ocelli; postverticals convergent. Face deeply excavated, short, the distance from the mouth to the root of the antennæ about one third the length of the front and vertex; epistome projecting almost tuberculate below the antennæ; cheeks one third the eye-height, anteriorly projecting, with a single row of marginal bristles and with a single porrect vibrissa. Bristles and setulæ black; four dorsocentrals, acrostichal and other setulæ strong, one sternopleural, two posterior and one superior mesopleurals, two prothoracic, pleuræ loosely setulose. Six abdominal segments cinereous pruinose, the seventh segment more or less polished black and rounded. Coxæ, femora and tibiæ concolorous with the body, the tarsi, except the last joint, yellowish; bristles of front femora rather strong; middle tibiæ with strong terminal spur; pulvilli large, white. Halteres whitish. Wings nearly hyaline, with yellowish tinge; the penultimate section of the fourth vein slightly longer than the ultimate section of the fifth; costa not at all weakened at the humeral cross-vein, but broken just before the end of the first vein; basal cells distinct, anal vein entirely wanting.

Three specimens, taken on the sea beach at Alki Point, Seattle, Washington, August 2, 1908.

While this species is clearly a *Rhinoëssa*, it bears a strong resemblance in the shape of its head to certain Milichiine genera. The narrowed front with central depression, the numerous fronto-orbitals, the short, carinate face, the lengthened proboscis and the nearly hori-

zontal and projecting oral margin remind one of the description of *Platophrymyia*. In that genus, however, the disc of the mesonotum is not bristly.

APHANIOSOMA Becker.

A minute yellow species from the Bahamas was sent me by C. W. Johnson, with the label *Cacoxenus*. As the specimen is defective, lacking the wings, it can not be fully determined, but it is apparently very closely related to the type-species, *approximatum*, from Egypt, which was described by Becker in the conclusion of the Aegyptische Dipteren, page 187 (1903).

CHIROMYIA Desvoidy.

Entirely yellow, including the antennæ, legs, halteres, hairs and bristles, and the veins of the wings, only the small ocellar triangle black; eyes circular; about six irregular rows of dorsocentrals; scutellum with a few setulæ in addition to the regular bristles; mesopleuræ setulose. 2-3 mm. (Eur.; Afr.; N. Y., Mass., N. J., N. H., Ga., La.,* Cal.,* Wash.*) (*Scyphella*).....*flava* Linnaeus.
Same in color, but the ocellar triangle brown; eyes horizontally oval; about four rows of acrostichals; scutellum and mesopleuræ not setulose. 1.5 mm. (Eur. ; * Wash., * Cal. *).....*minima* Becker.

EXPLANATION OF PLATE VIII.

Fig. 1. Wing of *Leucopis griseola* Fallen, Ochthiphilinæ. Costa unbroken, auxiliary vein largely separate from the first vein.

Fig. 2. Wing of *Meoneura vagans* Fallen, Milichiinæ. Costa broken beyond humeral cross-vein and before the end of the first vein. Auxiliary vein and anal vein rudimentary.

Fig. 3. Wing of *Trixoscelis frontalis* Fallen, Geomyzinæ. Costa interrupted at first vein only.

Fig. 4. Head of *Ochthiphila polystigma* Meigen, Ochthiphilinæ.

Fig. 5. Head of *Pholeomyia indecora* Loew, Milichiinæ.

Fig. 6. Head of *Madiza halteralis* Coquillett, Milichiinæ. Lower occiput extending obliquely forward, the bucca small and comprising the vibrissal angle.

Fig. 7. Head of *Cerodonta femoralis* Meigen, Agromyzinæ. Gena narrower than bucca.

Fig. 8. Head of *Diastata eluta* Loew, Geomyzinæ. Bucca narrower than gena.